1. A biomaterial comprising a pharmaceutically active moiety, wherein said biomaterial has an ester or amide bond onto said pharmaceutically active moiety, said bond having a half-life of between 1 hour and 1 year in an aqueous solution at pH 7.4 and 37 °C.

2. The biomaterial of claim 1, wherein the half-life of the ester or amide bond onto said pharmaceutically active moiety is between 1 day and 9 months in an aqueous solution at pH 7. 4 and 37 °C.

3. The biomaterial of claim 1, wherein said pharmaceutically active moiety is derived from one of the group consisting of synthetic organic molecules, naturally occurring organic molecules, nucleic acid molecules, biosynthetic proteins or peptides, naturally occurring peptides or proteins, and modified naturally occurring peptides or proteins.

4. The biomaterial of claim 1, wherein said organic molecule is paclitaxel, doxorubicin, 5-fluorodeoxyuridine, estradiol, 2-methoxyestradiol, or a derivative thereof.

5. A biomaterial formed from the cross-linking of two or more precursor components, said precursor components having the formula:

D-Y-C(O)-$(CH_2)_n$-S-$(CH_2)_2$-COX-P,

D-Y-C(O)-$(CH_2)_n$-NH-$(CH_2)_2$-COX-P,

D-Y-C(O)-$(CH_2)_n$-NH-U-P,

D-Y-C(O)-$(CH_2)_n$-S-U-P,

D-Y-C(O)-$(CH_2)_2$-S-L-S-CH_2-CH_2-CO-X-P,

D-Y-C(O)-$(CH_2)_2$-S-L-S-U-P,

D-Y-C(O)-$(CH_2)_2$-NH-L-S-CH_2-CH_2-CO-X-P,

D-Y-C(O)-$(CH_2)_2$-NH-L-S-U-P,

D-Y-C(O)-$(CH_2)_2$-S-L-NH-CH_2-CH_2-CO-X-P,

D-Y-C(O)-$(CH_2)_2$-S-L-NH-U-P,

D-Y-C(O)-$(CH_2)_2$-NH-L-NH-CH_2-CH_2-CO-X-P, or

D-Y-C(O)-$(CH_2)_2$-NH-L-NH-U-P,

wherein D is a pharmaceutically active moiety; Y is O, NH, or N; L is a linear or branched linker; X is O or N; P is a water-soluble polymer or a water-swellable polymer comprising one or more conjugated unsaturated groups; and U is the product of the addition of a nucleophile to an electrophilic group that is attached to said polymer; wherein the half-life of the ester or amide bond onto said pharmaceutically active moiety is between 1 hour and 1 year in an aqueous solution at pH 7.4 and 37 °C.

6. The biomaterial of claim 5, wherein said cross-linking occurs in the presence of a polymer that does not contain a pharmaceutically active moiety, said polymer comprising two or more conjugated unsaturated groups, wherein said polymer is incorporated into said biomaterial.

7. The biomaterial of claim 5, wherein said cross-linking occurs in the presence of a linker comprising two or more nucleophilic groups, wherein said linker provides targeting to a cell, tissue, organ, organ system, or site within a

mammal.

8. The biomaterial of claim 5, wherein said water-soluble or water-swellable polymer is selected from the group consisting of poly(ethylene glycol), poly(ethylene oxide), poly(vinyl alcohol), poly(acrylic acid), poly(ethylene-co-vinyl alcohol), poly(vinyl pyrrolidone), poly(acrylic acid), poly(ethyloxazoline), poly(ethylene oxide)-co-poly(propylene oxide) block copolymers, or water-soluble or water-swellable copolymers comprising these polymers, and their derivatives comprising conjugated unsaturated groups.

9. The biomaterial of claim 5, wherein said unsaturated groups are not activated as to undergo nucleophilic substitution reactions.

10. The biomaterial of claim 5, wherein said conjugated unsaturated groups are selected from the group consisting of acrylates, methacrylates, acrylamides, methacrylamides, acrylonitiriles, and quinones.

11. The biomaterial of claim 5, wherein said linker comprises an adhesion site, growth factor binding site, protease binding site, or enzymatically degradable site.

12. The biomaterial of claim 5, wherein said linker comprises a nucleophilic group that increases the rate of release of a pharmaceutically active compound having the formula D-OH, D-NH_2, or D-NH by reacting with the ester or amide bond onto D.

13. A method of forming a biomaterial, said method comprising the steps of:

(a) attaching a pharmaceutically active compound to a linker molecule or incorporating a nucleophilic amine or thiol into a pharmaceutically active compound,

(b) removing any thiol-or amine-protecting groups in said linker,

(c) coupling a thiol, amine, or alkene group in said linker or incorporated into said pharmaceutically active compound to a water soluble polymer or a water swellable polymer comprising two or more conjugated unsaturated groups by a conjugate addition reaction to form a precursor component, and

(d) cross-linking the uncoupled conjugated unsaturated groups in one or more said precursor components.

14. The method of claim 13, wherein said cross-linking of said uncoupled unsaturated groups occurs at or near a site within the body of a mammal.

15. A method of treating or preventing a disease, disorder, or infection in a mammal by administering to said mammal a biomaterial comprising a pharmaceutically active moiety, wherein said biomaterial has an ester or amide bond onto said pharmaceutically active moiety, said bond having a half-life of between 1 hour and 1 year in an aqueous solution at pH 7.4 and 37 °C.

16. The method of claim 15, wherein said mammal is a human.